AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1. (Previously Presented) A system for guiding a device toward an object comprising:

means for generating a guidance command signal from: a vectored line-of-sight (LOS) between a device and an object using a position parameter of the object relative to a guidance frame, and an estimated object state produced in the guidance frame using the vectored line-of-sight, wherein the means for generating adapts the guidance command signal based on an estimate of target maneuver frequency; and

means for transmitting the guidance command signal to an on-board guidance control of the device.

2. (Original) A system for guiding a device toward an object in accordance with claim 1, wherein the means for generating a guidance command signal creates an estimated object to device range vector, an estimated object to device velocity vector and an estimated object acceleration vector.

3. (Original) A system for guiding a device toward an object in accordance with claim 2, wherein the means for generating a guidance command signal creates an estimated object acceleration rate vector.

4. (Original) A system for guiding a device toward an object in accordance with claim 1, wherein the means for generating a guidance command signal is periodically adaptive.

5. (Original) A system for guiding a device toward an object in accordance with claim 1, wherein the means for generating a guidance command signal comprises:

means for generating a set of probability weights.

6. (Original) A system for guiding a device toward an object in accordance with claim 5, wherein the sum of the probability weights for any axis of the guidance frame is unity.

7. (Original) A system for guiding a device toward an object in accordance with claim 1, wherein the means for generating a guidance command signal uses sequential line-of-sight (LOS) vectors in the guidance frame.

8. (Original) A system for guiding a device toward an object in accordance with claim 1, wherein the means for generating a guidance command signal comprises:

at least one Kalman filter bank.

9. (Original) A system for guiding a device toward an object in accordance with claim 8, wherein the at least one Kalman filter bank is harmonically balanced.

10. (Original) A system for guiding a device toward an object in accordance with claim 9, wherein each of the at least one Kalman filter bank is associated with a respective axis in the guidance frame.

11. (Original) A system for guiding a device toward an object in accordance with claim 1, wherein the means for generating a guidance command signal comprises:

a proportional navigation controller.

12. (Previously Presented) A system for guiding a device toward an object in accordance with claim 1, wherein the means for generating a guidance command signal comprises:

an augmented proportional navigational controller.

13. (Original) A system for guiding a device toward an object in accordance with claim 1, wherein the means for generating a guidance command signal comprises:

a classical optimal controller.

15 ~~14.~~ (Previously Presented) A method for guiding a device toward an object comprising the steps of:

creating a vectored object line-of-sight (LOS)in a guidance frame;

producing an estimated object state, using sequential object LOS;

using proportional navigation control to create a device guidance command as a function of an estimated range vector and an estimated velocity vector obtained using the estimated object state, wherein the device guidance command is adapted based on an estimate of target maneuver frequency.

16 ~~15.~~ (Original) A method for guiding a device toward an object in accordance with claim ~~14~~ 15, wherein the estimated object state is adaptively produced.

17 ~~16.~~ (Original) A method for guiding a device toward an object in accordance with claim ~~15~~ 16, comprising the steps of:

creating a periodically adaptive guidance command using estimated object state; and,

adding the periodically adaptive guidance command to the device guidance command.

19 ~~17.~~ (Original) A method for guiding a device toward an object according to claim ~~15~~ 16, wherein the step of creating a device guidance command comprises the step of:

creating a guidance command operating on device acceleration to compensate for autopilot lag.

18. (Previously Presented) A method for guiding a device toward an object according to claim ~~16~~ 17, wherein the step of creating an periodically adaptive guidance command comprises the step of:

using a function of object maneuver frequencies, time-to-go before intercept, maneuver frequency correlation time constants, estimated target accelerations and estimated object acceleration rates.

20
19. (Original) A method for guiding a device toward an object in accordance with claim 14, wherein the step of creating a vectored object line-of-sight comprises the steps of:

a) obtaining azimuth, elevation and range information of an object;

b) using the azimuth, elevation and range information for vectored LOS reconstruction to create a unit vector representative of the object's orientation in a guidance frame of the device; and,

c) applying the range information to the output of the vectored LOS reconstruction to create the estimated range.

21
20. (Previously Presented) A method for guiding a device toward an object in accordance with claim 19, wherein the step of producing an estimated object state comprises the step of:

processing plural sequential estimated range vectors into an object state estimator in an inertial guidance frame estimated object state, wherein the estimated object state includes range, velocity, object acceleration and object acceleration rate.

22
21. (Previously Presented) A guidance system for guiding a device toward an object comprising:

means for generating a signal representing a predicted position of the object from: object position parameters relative to a guidance frame and a periodically adaptive estimated object state produced in the guidance frame using the object position parameters, wherein the means for generating adapts the signal based on an estimate of target maneuver frequency; and,

means for transmitting the signal to an on-board guidance control of the device.

23
22. (Previously Presented) A guidance system for guiding a device toward an object according to claim 21, comprising:

a fire control platform

wherein the means for generating a signal representing the predicted position of the object is located on the fire control platform, and the fire control platform is remote from the device.

24
23. (Previously Presented) A method for guiding a device toward an object comprising the steps of:

obtaining object position parameters;

periodically adaptively producing an estimated object state;

creating a predicted position from the estimated object state; and,

determining a guidance command from the predicted position of the object, wherein the guidance command is adapted based on an estimate of target maneuver frequency.

25
24. (Previously Presented) A method for guiding a device toward an object according to claim 23, comprising the steps of:

transmitting the predicted position of the object from a remote location to the device;

wherein the step of determining a guidance command is performed on the device.

26
25. (Previously Presented) A method for guiding a device toward an object according to claim 23, comprising the steps of:

obtaining device position parameters;

determining at a remote location a time-to-intercept; and,

transmitting the time-to-intercept from the remote location to the device.

14
26. (Previously Presented) A system for guiding a device toward an object in accordance with claim 1, wherein the means for generating a guidance command signal is recursively adaptive.